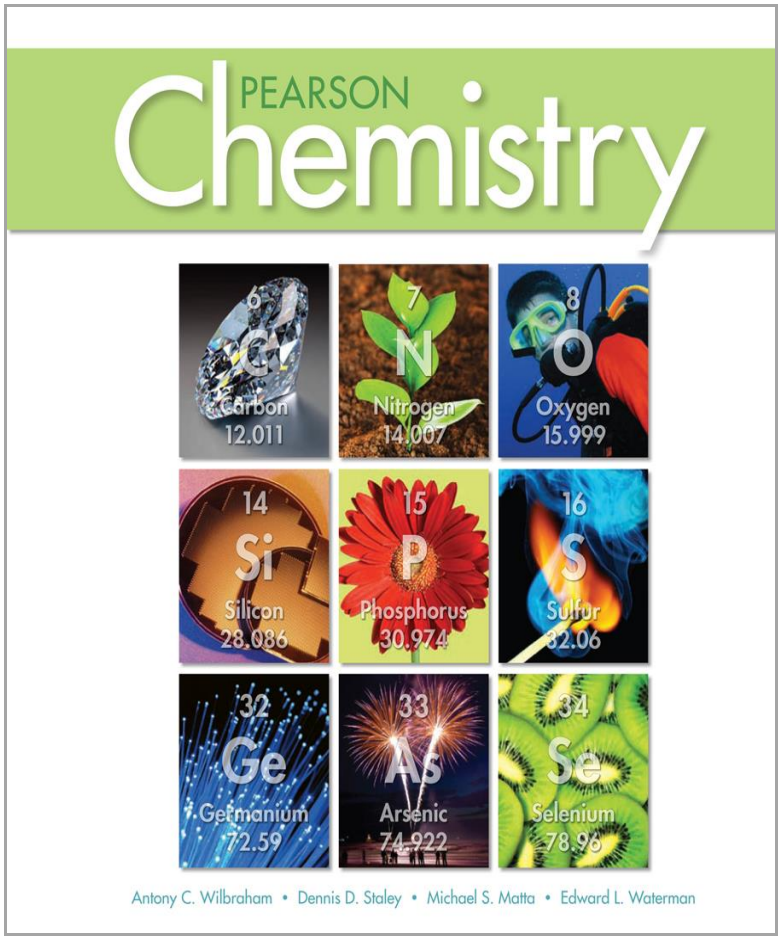
A Correlation of



to the

Indiana Academic Standards for Science Chemistry

Pearson

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Introduction

The following document demonstrates how ***Pearson Chemistry*** supports the Indiana Academic Standards for Science in Chemistry. Correlation references are to the Student Edition (SE) and Teacher Edition (TE). Italicized citations refer to pages containing Assessment exercises that meet the standard.

Pearson Chemistry combines proven and tested content with cutting-edge digital support and hands-on learning opportunities. This program provides you with everything you need to engage and motivate your students, as well as the tools to support the varied types of learners in your classroom.

Pearson Chemistry is built on a learning model that connects curriculum, instruction, and assessment to the "Big Ideas" of chemistry that develops deep understanding.

Pearson Chemistry provides all of the problem-solving and math support that students need to be successful in the course, with ample opportunity for practice both in the Student Edition and in the program's digital resources.

Pearson Chemistry helps you meet the unique learning styles of each student in your classroom with a variety of resources. A variety of assessment opportunities helps you monitor student progress ensure student success on high-stakes tests.

Pearsonchem.com provides cutting-edge digital content that engages students and teachers – anytime, anywhere, with numerous practice opportunities and visual support, including interactive art and animations. Online tutors step students through chemistry and math problems, expanding learning beyond the classroom.

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Science and Engineering Process Standards (SEPS)	
The Science and Engineering Process Standards are the processes and skills that students are expected to learn and be able to do within the context of the science content. The separation of the Science and Engineering Process Standards from the Content Standards is intentional; the separation of the standards explicitly shows that what students are doing while learning science is extremely important. The Process Standards reflect the way in which students are learning and doing science and are designed to work in tandem with the science content, resulting in robust instructional practice.	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	Key Questions are listed at the beginning of each lesson. For representative pages, please see **SE/TE:** 2, 102, 194, 306, 420, 518, 646
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	Diagrams and models are used throughout the program to illustrate scientific ideas and explanations. For representative pages, please see **SE/TE:** 36, 195, 223-224, 293-294, 366-367, 432-434, 579-580, 656 **TE Only:** 32, What's Online 36, Student Activity

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Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	Throughout the program, various tools are shown in pictures and their purposes are explained. For representative pages, please see **SE/TE:** 14-16, 40, 85, 110-111, 140, 334-335, 502-503, 562-563
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	Quick Labs allow students to perform investigations to help them understand the Key Concepts and Big Ideas. For representative pages, please see: **SE/TE:** 17, 72, 120, 180, 207-208, 279, 328, 399, 437, 491, 545, 600, 670 Small Scale Labs offer students the opportunity to perform further analysis and/or design experiments relating to the Big Idea of the chapter. For representative pages, please see: **SE/TE:** 20, 120, 295, 399, 508, 635

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SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"	Interpret Graphs exercises require students to think about how data is represented. For examples, please see: **SE/TE:** 8, 178, 429, 456, 468, 542, 597, 605, 610, 665 Interpret Data exercises require students to think critically about experimental results. For examples, please see: **SE/TE:** 35, 177, 312, 427, 559 Think Critically questions in each chapter Assessment allow students to analyze and interpret data. For examples, please see: **SE/TE:** 57-58, 123-124, 216-217, 258, 300, 482, 512, 686-687, 722-723
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Math Tune-Ups summarize the calculations used in the lessons. **SE/TE:** 94, 151, 337, 410, 479, 547, 585, 637, 683, 899 The Foundations for Math feature gives direction for the types of problems included in the chapters. For representative pages, please see: **TE Only:** 24, 65, 118, 277, 363, 500, 526-527

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SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	Small Scale Labs offer students the opportunity to perform further analysis and/or design experiments relating to the Big Idea of the chapter. **SE/TE:** 51, 149, 254, 374, 475, 583, 717 Interpret Data exercises require students to use given data to describe and explain experimental results. For examples, please see: **SE/TE:** 81, 116, 177, 312, 427, 469, 729 Additionally, some Chemistry & You – On Your Own activities ask students to draw conclusions based on observational data that they obtain from simple experiments. **SE/TE:** 208, 316, 355, 681
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	In each chapter, the Big Idea and its associated CHEMystery prompt students to collect evidence to answer questions and explain phenomena as they progress through the chapter. Students are then asked to use evidence to explain their answers to these questions in a LessonCheck question and in the chapter Assessment. For representative pages, please see: **SE/TE:** 1, 61, 127, 193, 263, 345, 419, 487, 555, 645

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SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	Interpret Graphs exercises provide opportunities for students to understand how data is represented when communicating among scientists. For representative pages, please see **SE/TE:** 175, 423, 438, 458, 521, 572, 601, 607, 660, 677 In Interpret Data exercises, students learn about data organization and how to communicate results for future investigation. For representative examples, please see: **SE/TE:** 35, 81, 177, 332, 559, 729

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Literacy in Science/Technical Subjects: Grades 11-12 (11-12 LST) The Indiana Academic Standards for Content Area Literacy (Science/Technical Subjects) indicate ways in which educators incorporate literacy skills into science at the 6-12 grade levels.	
LST.1: LEARNING OUTCOME FOR LITERACY IN SCIENCE/TECHNICAL SUBJECTS Read and comprehend science and technical texts independently and proficiently and write effectively for a variety of discipline-specific tasks, purposes, and audiences	
11-12.LST.1.1: Read and comprehend science and technical texts within a range of complexity appropriate for grades 11-CCR independently and proficiently by the end of grade 12.	**SE/TE:** 2-3, What is Chemistry? 6-11, Why Study Chemistry? Review questions in each LessonCheck test students' comprehension of the concepts taught in the lesson. For representative pages, please see: 5, 104, 166, 225, 315, 389, 454, 524, 601, 699 The *Assessment* feature at the end of each chapter provides additional tasks that require students to cite textual evidence to demonstrate understanding of the text: 29-30, 97-98, 154-155, 188-189, 216-217, 378-379, 444-445, 512-513, 640-641
11-12.LST.1.2: Write routinely over a variety of time frames for a range of discipline-specific tasks, purposes, and audiences.	Write About Science questions in each chapter Assessment ask students to produce written pieces of various lengths For representative pages, please see: **SE/TE:** 30, 155, 259, 301, 513, 589, 641 In the Teacher's edition, Performance Tasks in the Study Guide and the Differentiated Instruction feature suggest additional writing activities for students to extend their knowledge of the chapter topic. **TE Only:** 54, 106, 130, 205, 335, 375, 533, 687

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LST.2: KEY IDEAS AND TEXTUAL SUPPORT (READING) Extract and construct meaning from science and technical texts using a variety of comprehension skills	
11-12.LST.2.1: Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.	**SE/TE:** 2-5, What Is Chemistry? 6-11, Chemistry in Context The Assessment feature at the end of each chapter provides additional tasks that require students to cite textual evidence to support science text analysis. For representative page, please see: **SE/TE:** 217, 259, 301, 379, 483, 513, 687
11-12.LST.2.2: Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.	Students are prompted to determine central ideas or conclusions throughout the text in Key Questions, located at the beginning of each lesson. For representative pages, please see: **SE/TE:** 34, 128, 222, 346, 450, 556, 692 LessonChecks contain exercises requiring students to determine central ideas, explain a process, and provide accurate summaries of lesson content. For representative pages, please see: **SE/TE:** 37, 119, 199, 253, 367, 398, 493, 531, 652 Think Critically exercises in the chapter Assessments require students to determine central ideas and use analogies to summarize or paraphrase information. For representative pages, please see: **SE/TE:** 97, 123-124, 216, 300, 340, 414, 444-445, 550, 686
11-12.LST.2.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	Small-Scale Labs engage students in following multistep procedures, taking measurements, performing technical tasks, and analyzing results. For representative pages, please see: **SE/TE:** 39, 142, 238, 354, 467, 571, 699

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LST.3: STRUCTURAL ELEMENTS AND ORGANIZATION (READING) Build understanding of science and technical texts, using knowledge of structural organization and author's purpose and message	
11-12.LST.3.1: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.	The Vocabulary feature located at the beginning of each lesson highlights scientific vocabulary. For representative pages, please see: **SE/TE:** 2, 62, 194, 222, 346, 450, 518, 594, 646, 728 Study Guides at the end of each chapter list all lesson vocabulary and their page location to assist students in reviewing definitions and terminology in context. For representative pages, please see: **SE/TE:** 27, 93, 185, 255, 375, 442, 509, 584, 682
11-12.LST.3.2: Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.	Big Ideas introduce every chapter and identify the fundamental themes of chemistry and the relationship among concepts. For representative pages, please see **SE/TE:** 4-5, 33, 101, 159, 221, 305, 383, 449, 517, 593 Students apply their understanding of relationships among concepts in the Big Idea exercises in selected LessonChecks. For representative pages, please see **SE/TE:** 37, 104, 166, 253, 323, 398, 454, 531, 652 Understand Concepts and Compare and Contrast exercises in the chapter Assessments require students to analyze and categorize ideas and information from the text. For representative pages, please see **SE/TE:** 28-29, 37, 56-57, 109, 153-154, 187, 225, 257-258, 299, 339-340, 454, 501, 549-550, 587-588, 639-640, 652, 879

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11-12.LST.3.3: Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.	The author's purpose is determined through Key Questions found at the beginning of each lesson. Students find the answers to these questions throughout the lesson. For representative pages, please see **SE/TE:** 62, 160, 264, 384, 488, 594, 728 Students investigate a CHEMystery presented at the start of each chapter and have to consider the author's purpose in the mystery's inclusion with each chapter's content. For representative pages, please see **SE/TE:** 1, 101, 193, 305, 419, 517, 645, 691

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LST.4: SYNTHESIS AND CONNECTION OF IDEAS (READING) Build understanding of science and technical texts by synthesizing and connecting ideas and evaluating specific claims	
11-12.LST.4.1: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., *quantitative data, video, multimedia*) in order to address a question or solve a problem.	The Chemistry & You feature requires students to research societal issues and viewpoints that support or contradict chemical findings. **SE/TE:** 52-53, 133, 208, 239, 355, 440, 532, 620, 700 Further opportunities to meet this standard occur as students engage in research tasks prescribed by Write about Science chapter Assessment questions. **SE/TE:** 58, 341, 513, 687, 723
11-12.LST.4.2: Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	Students investigate a CHEMystery that is described at the start of each chapter. For representative pages, see **SE/TE:** 1, 101, 159, 221, 305, 383, 449, 517, 593,691 Students apply information they have learned throughout the chapter and evaluate data provided by the author to solve the chapter mystery. For representative pages, see **SE/TE:** 58, 124, 189, 259, 341, 415, 483, 551, 641, 723 In Quick Labs, students are asked to evaluate their own findings and those of other researchers. For representative pages, see **SE/TE:** 72, 180, 279, 404, 491, 600, 662
11-12.LST.4.3: Synthesize information from a range of sources (e.g., *texts, experiments, simulations*) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	In each text chapter, the ***Pearson Chemistry*** program includes Quick Lab and Small-Scale Lab activities to enhance student understanding of the material addressed in the text. In the PearsonChem.com online platform, Virtual Labs and Kinetic Art provide interactive simulations of chemical experiments and phenomena to help students access and understand information on situations that are difficult to reproduce in a classroom setting.

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LST.5: WRITING GENRES (WRITING) Write for different purposes and to specific audiences or people	
11-12.LST.5.1: Write arguments focused on discipline-specific content.	The Think Critically and Write about Science sections of the chapter Assessments provide students with opportunities to practice forming and supporting arguments that communicate their understanding of scientific concepts. For representative pages, please see **SE/TE:** 58, 154, 217, 258, 378-379, 379, 482, 551, 588, 722-723
11-12.LST.5.2: Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.	See the Write About Science exercises on the following page: **SE/TE:** 124, 259, 415, 687
LST.6: THE WRITING PROCESS (WRITING) Produce coherent and legible documents by planning, drafting, revising, editing, and collaborating with others	
11-12.LST.6.1: Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach, focusing on addressing what is most significant for a specific purpose and audience; and edit to produce and strengthen writing that is clear and coherent.	Opportunities to address this standard occur as the student engages in the writing tasks cited for standards in the LST.5 group above and for standard 11-12.LST.6.2 and the LST.7 group below.
11-12.LST.6.2: Use technology to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	The following Class Activity, Extend, and 21st Century Learning features suggest activities in which students use multimedia or internet technology in individual or shared writing projects. **TE Only:** 12, 205, 239, 266, 316, 351, 440, 602

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LST.7: THE RESEARCH PROCESS (WRITING) Build knowledge about the research process and the topic under study by conducting short or more sustained research	
11-12.LST.7.1: Conduct short as well as more sustained research assignments and tasks to answer a question (including a self-generated question), test a hypothesis, or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	The Chemistry & You feature requires students to research societal issues and viewpoints that support or contradict chemical findings. For representative pages, please see **SE/TE:** 12, 73, 133, 183, 284, 316, 440, 502, 602, 681
11-12.LST.7.2: Gather relevant information from multiple types of authoritative sources, using advanced searches effectively; annotate sources; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; synthesize and integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation (e.g., *APA or CSE*).	**SE/TE:** The Chemistry & You feature requires students to evaluate and use multiple sources in their research of chemistry-related societal issues. **SE/TE:** 52-53, 110, 239, 355, 407, 476, 532, 620, 700
11-12.LST.7.3: Draw evidence from informational texts to support analysis, reflection, and research.	Assessment activities at the end of each chapter call on students to draw evidence from science text to support analysis, reflection, and research. For representative pages, please see **SE/TE:** 189, 217, 259, 301, 341, 483, 513, 687

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Content Standards For the high school science courses, the content standards are organized around the core ideas in each particular course. Within each core idea are indicators which serve as the more detailed expectations within each of the content areas.	
Standard 1: Properties and States of Matter	
C.1.1 Differentiate between pure substances and mixtures based on physical and chemical properties.	**SE/TE:** 38-41, 44, *55, 56, 58*
C.1.2 Use chemical properties, extensive, and intensive physical properties to identify substances.	**SE/TE:** 34-35, 37, *55-57*
C.1.3 Recognize observable macroscopic indicators of chemical changes.	**SE/TE:** 42-43, 48-50, 51, *56-58* **TE Only:** 43, Teacher Demo 49, Teacher Demo
C.1.4 Describe physical and chemical changes at the particle level.	**SE/TE:** 37, 48-50, *56, 57*
C.1.5 Describe the characteristics of solids, liquids, and gases and changes in state at the macroscopic and microscopic levels.	**SE/TE:** 36-37, *55, 56* **TE Only:** 36, Teacher Demo
C.1.6 Demonstrate an understanding of the law of conservation of mass through the use of particle diagrams and mathematical models.	**SE/TE:** 50, *57*, 405, *411*, *415*
C.1.7 Perform calculations involving density and distinguish among materials based on densities.	**SE/TE:** 80-82, *95-98*, *124* **TE Only:** 81, Class Activity

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Standard 2: Atomic Structure and the Periodic Table	
C.2.1 Using available experimental data, explain how and why models of atomic structure have changed over time.	**SE/TE:** 102-104, 105-109, *122-124* **TE Only:** 106, Differentiated Instruction L3 107, Teacher Demo 107, Extend
C.2.2 Determine the number of protons, neutrons, and electrons in isotopes and calculate the average atomic mass from isotopic abundance data.	**SE/TE:** 114-119, 120, *122-123*
C.2.3 Write the full and noble gas electron configuration of an element, determine its valence electrons, and relate this to its position on the periodic table.	**SE/TE:** 134-137, *152, 153, 154*, 170-173, 182, *186*, 194-199, *214, 215* **TE Only:** 135, Class Activity 173, Professional Development Note 197, Differentiated Instruction L1
C.2.4 Use the periodic table as a model to predict the relative properties of elements based on the pattern of valence electrons and periodic trends.	**SE/TE:** 174-175, 177-178, 179-180, 181-182, *186-189*, 194-199, *214-217* **TE Only:** 169, Differentiated Instruction L3 171, Teacher Demo 176, Class Activity 178, Teacher Demo 179, Differentiated Instruction L1 and L3
C.2.5 Compare and contrast nuclear reactions with chemical reactions.	**SE/TE:** 356-367, 876, 885-891 **TE Only:** 877, Professional Development Note
C.2.6 Describe nuclear changes in matter, including fission, fusion, transmutations, and decays.	**SE/TE:** 880-881, 885-886, 888-889, 891, 894-897, *900, 902, 903* **TE Only:** 878, Teacher Demo 895, Teacher Demo 897, Extend
C.2.7 Perform half-life calculations when given the appropriate information about the isotope.	**SE/TE:** 882-884, 887, *900, 902, 903* **TE Only:** 884, Extend

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Standard 3: Bonding and Molecular Structure	
C.3.1 Investigate the observable characteristics of elements, ionic, and covalent compounds.	**SE/TE:** 164-166, 201-206, 207, 208, 222-225 **TE Only:** 210, Teacher Demo
C.3.2 Compare and contrast how ionic and covalent compounds form.	**SE/TE:** 201-206, 222-225, *256, 258*
C.3.3 Draw structural formulas for simple molecules and determine their molecular shape.	**SE/TE:** 240-243, *256-260*
C.3.4 Write chemical formulas for ionic compounds and covalent compounds given their names and vice versa.	**SE/TE:** 201-203, 207, *214*, 222-225, *256,* 271-279, 280-283, *298-300*
C.3.5 Use laboratory observations and data to compare and contrast ionic, covalent, network, metallic, polar, and non-polar substances with respect to constituent particles, strength of bonds, melting, and boiling points and conductivity; provide examples of each type.	**SE/TE:** 204-207, 209-211, *216*, 224-225, 236-238, 249-250, 252-253, *256, 258*
C.3.6 Use structural formulas of hydrocarbons to illustrate carbon's ability to form single and multiple bonds within a molecule.	**SE/TE:** 228, 230, *258, 259,* 762-763, 772-773, 779-781, *790, 792*
Standard 4: Reactions and Stoichiometry	
C.4.1 Describe, classify, and give examples of various kinds of reactions: synthesis (i.e., combination), decomposition, single displacement, double displacement, acid/base, and combustion.	**SE/TE:** 356-367, *377-379*, 672-675, *684-686*
C.4.2 Predict products of simple reactions as listed in C.4.1.	**SE/TE:** 359, 361, 363, 365, 367, *377-378*, 675, *684*
C.4.3 Balance chemical equations and use the law of conservation of mass to explain why this must be true.	**SE/TE:** 349-354, 376, *377-379*

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C.4.4 Apply the mole concept to determine the mass, moles, number of particles, or volume of a gas at STP, in any given sample, for an element or compound.	**SE/TE:** 306-315, 317-323, 324, *338-341* **TE Only:** 314, Class Activity
C.4.5 Use a balanced chemical equation to calculate the quantities of reactants needed and products made in a chemical reaction that goes to completion.	**SE/TE:** 384-389, 390-398, 400-403, *411-415* **TE Only:** 392, Teacher Demo
C.4.6 Perform calculations to determine the composition of a compound or mixture when given the necessary information.	**SE/TE:** 325-329, *338-340*, 394-395
C.4.7 Apply lab data to determine the empirical and molecular formula of a compound.	**SE/TE:** 330-333, *338-340*
Standard 5: Behavior of Gases	
C.5.1 Use the kinetic molecular theory with the combined and ideal gas laws to explain changes in volume, pressure, moles, and temperature of a gas.	**SE/TE:** 451-453, 462-463, 464-466, *480-481* **TE Only:** 452, Teacher Demo
C.5.2 Apply the ideal gas equation (PV = nRT) to calculate the change in one variable when another variable is changed and the others are held constant.	**SE/TE:** 464-466, *479, 480-481*
C.5.3 Use lab data and a balanced chemical equation to calculate volume of a gas at STP and non STP conditions, assuming that the reaction goes to completion and the ideal gas law holds.	**SE/TE:** 464-468, *480-483*

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Standard 6: Thermochemistry	
C.6.1 Explain that atoms and molecules are in constant motion and that this motion increases as thermal energy increases.	**SE/TE:** 556, 596-597
C.6.2 Distinguish between the concepts of temperature and heat flow in macroscopic and microscopic terms.	**SE/TE:** 556-561, *586, 587*
C.6.3 Classify chemical reactions and phase changes as exothermic or endothermic based on enthalpy values. Use a graphical representation to illustrate the energy changes involved.	**SE/TE:** 565-568, 569-575, *586-588*
C.6.4 Perform calculations involving heat flow, temperature changes, and phase changes by using known values of specific heat, phase change constants, or both.	**SE/TE:** 561, 564, 567-568, 570, 573, 575, *586-588*
Standard 7: Solutions	
C.7.1 Describe the composition and properties of solutions.	**SE/TE:** 518-521, 525-527, 534-537
C.7.2 Explain how temperature, pressure, and polarity of the solvent affect the solubility of a solute.	**SE/TE:** 521-524, *548, 550*
C.7.3 Describe the concentration of solutes in a solution in terms of molarity. Perform calculations using molarity, mass, and volume. Prepare a sample of given molarity provided a known solute.	**SE/TE:** 525-527, 545, *548-551* **TE Only:** 527, Class Activity 530, Teacher Demo

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Standard 8: Acids and Bases	
C.8.1 Classify solutions as acids or bases and describe their characteristic properties.	**SE/TE:** 656-659, 662, 681, *684, 685*
C.8.2 Compare and contrast the strength of acids and bases in solutions.	**SE/TE:** 664-669, *684* **TE Only:** 677, Teacher Demo
C.8.3 Given the hydronium ion and/or the hydroxide ion concentration, calculate the pH and/or the pOH of a solution. Explain the meanings of these values.	**SE/TE:** 653-659, 662, *684, 685*